CHAPTER 10

MOORING DEVICES

10-1. Typos.

The types of mooring devices most commonly used in the berthing of both deep and shallow-draft vessels are as follows:

a. Bollards(fig. 10-1)
b. Corner mooring post (fig. 10-2)
c. Cleats(fig. 10-3)
d. Chocks(fig. 10-4)
e. Pad eyes (fig. 10-5)
f. Power capstan (fig. 10-6)
g. Releasing hooks (fig. 10-7)

10-2. Capacity and spacing.

Mooring devices should be adequate in size, number, and spacing to resist the forces of wind, current, waves, ice, and other related natural elements.

a. Capacity. Mooring devices are sometimes assigned design capacities by the manufacturers. However, the specific operating conditions at a given berth should be considered in assessing the capacity of any type of device and its anchorage. These devices and their anchorages should be designed to withstand a force 50 percent greater than the breaking strength of an attached hawser. The mooring force may be assumed in its most unfavorable design position, which is ordinarily horizontal and perpendicular to the long axis of the device when under stress. Furthermore, the capacity of a device of given size and shape will be affected by the type of metal used in its manufacture. Devices are normally available in cast iron, ductile iron, or cast steel in various stress-grades of each metal.

b. Spacing. The types and spacing chosen for a specific berth should be based upon the characteristics and convenience of the using vessel. A typical arrangement of mooring devices to service both small and large vessels is shown in figure 10-8.

10-3. Anchorage.

Mooring devices should be anchored firmly to their supporting structure. The uplift, horizontal forces, and overturning moments may be considered in selecting types of anchorage.

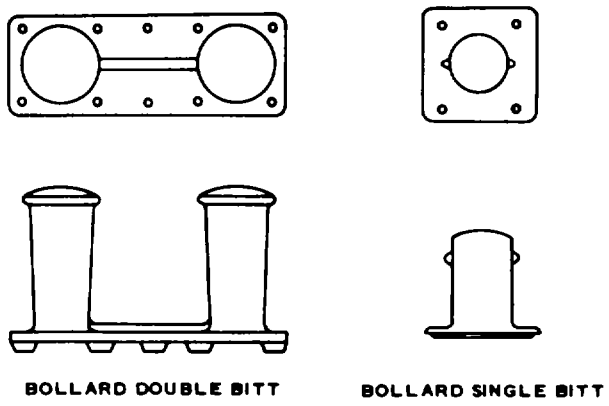

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Figure 10-1. Single and double bitt bollards

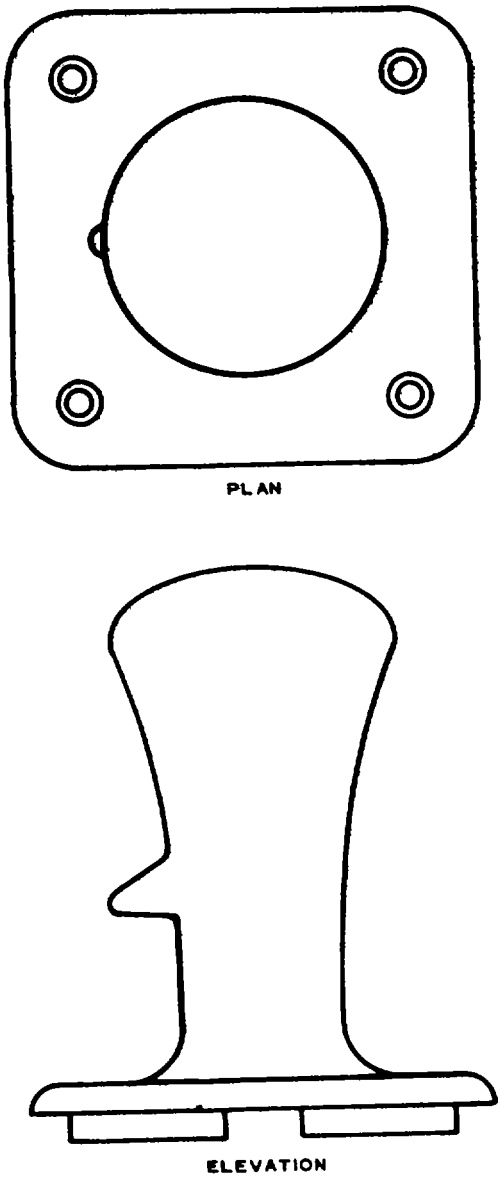

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Figure 10-2. Plan and elevation views of a corner mooring past.

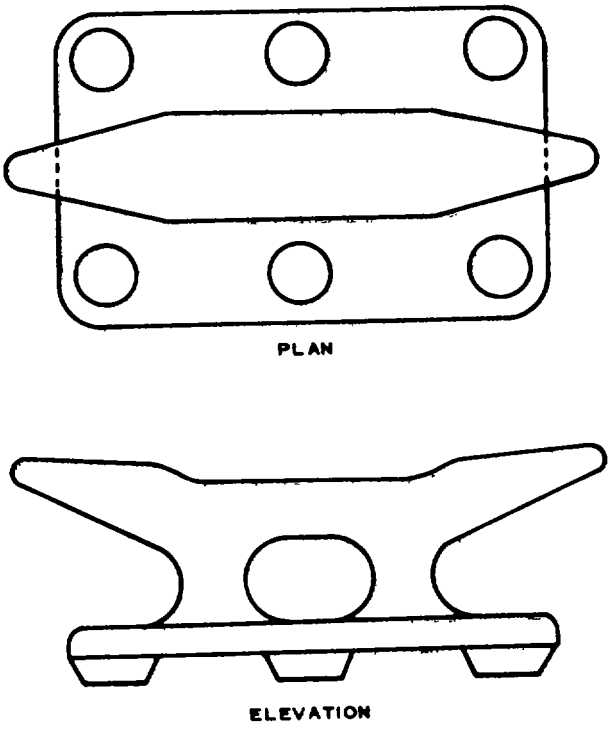

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Figure 10-3. Plan and elevation views of an open wide-base cleat.

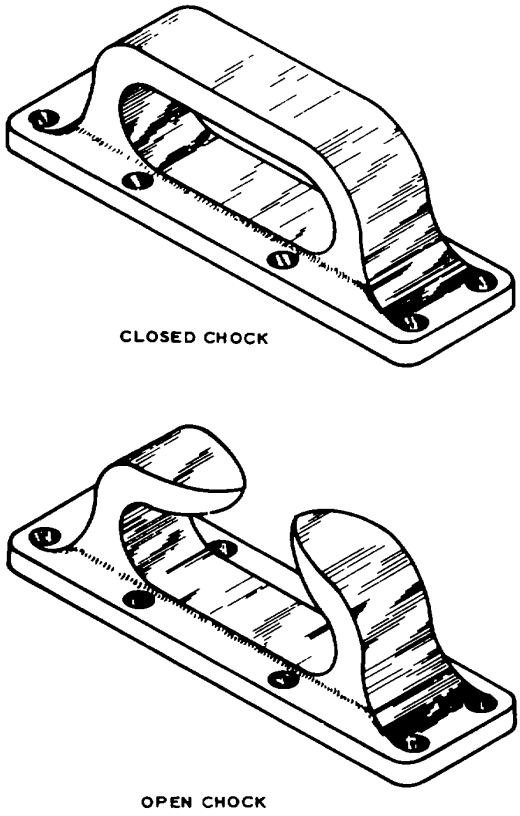

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Figure 10-4. Typical chocks.

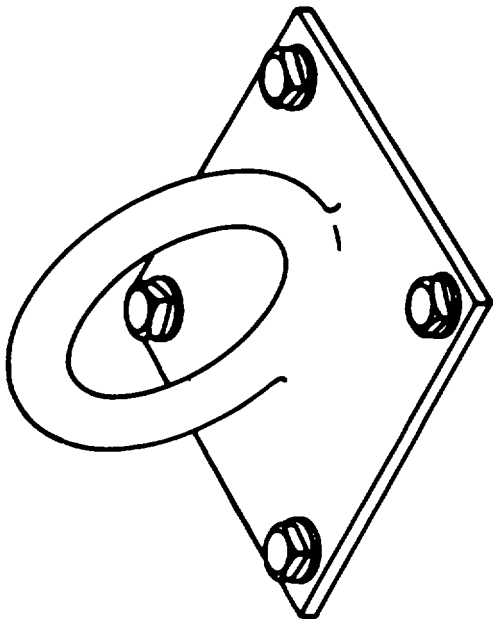

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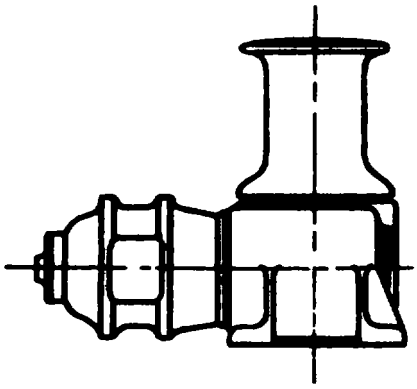
Figure 10-5. Typical pad eye.



"Design and Construction of Ports and Marine Structures: by A. Quinn. Second Edition, 1972 McGraw-Hill Book Company. Used with permission of McGraw Hill Company.

Figure 10-6. Typical power capstan.

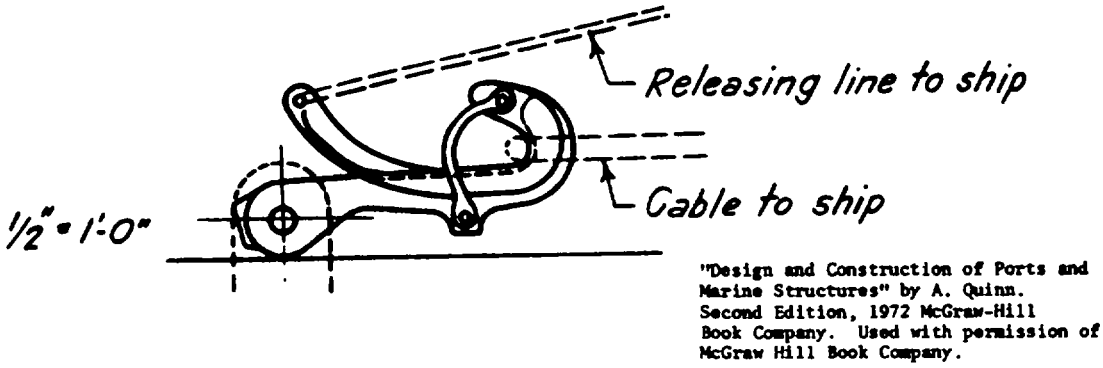


Figure 10-7. Typical releasing hook.

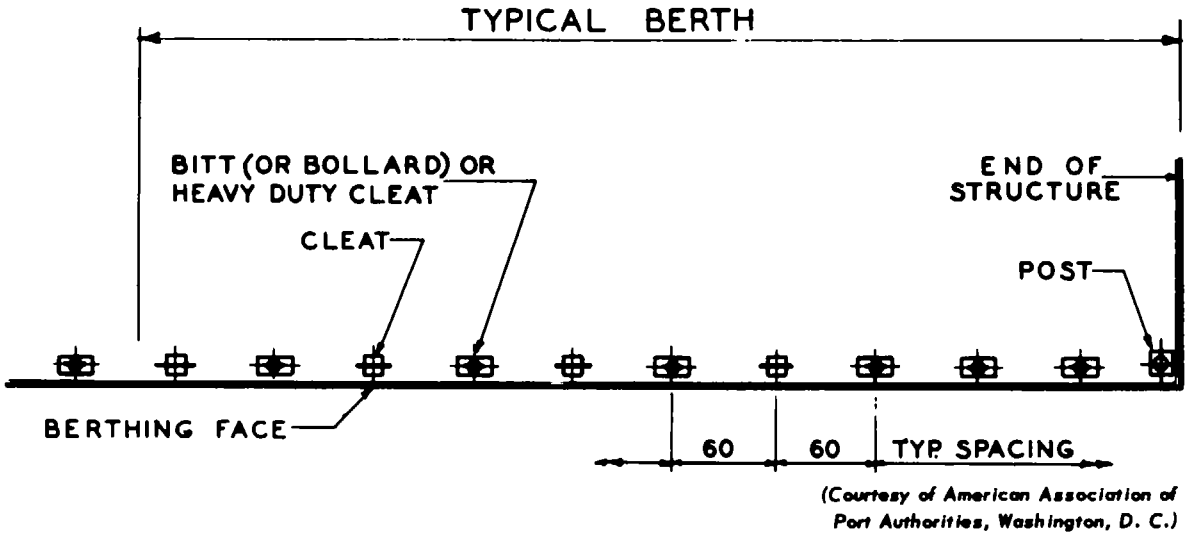


Figure 10-8. Typical layout of mooring devices.